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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,511	10/25/2002	Chia J. Liu	2002-0165	2132

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EXAMINER	
DING, LEIBO	

ART UNIT	PAPER NUMBER
2632	

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,511	LIU, CHIA J.	
	Examiner	Art Unit	
	Leibo Ding	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: Multiprotocol Label Switching Architecture.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The abstract of disclosure is not descriptive to provide enough information for the public to understand the invention.

The abstract of the disclosure is objected to because the abstract should not use term "novel", which relates to merits of the invention. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 7, 8, 13 – 16 and 22 are rejected under 35 U.S.C. 102(e) as being unpatentable by U.S. Patent Number 7020150 to Ka K, Ho (hereinafter "Ho").

With respect to claim 1, Ho discloses a method for traffic and subscriber service differentiatation using multiprotocol label switching (MPLS) creates different service tiers (TE tunnels), where each service tire is associated with a unique combination of resource class and hold priority (col. 4, lines 40 - 44), wherein (upon the request) a label switched path (tunnel) is established from an ingress point border device (Label Edge Router or LER) to an egress point border device (Label Edge Router or LER), the label switched path traverses a number of intermediate label switching devices (Label Switching Router or LSR); when packet enters the ingress LER, the ingress LER inserts the corresponding label in the packet, specifically within a label header (col. 1, lines 51 – 60); and the enhanced MPLS devices (routers) separate traffic into separate queues based on service tiers (Labels) (col. 4, lines 44 – 46); bandwidth can be supplied on a service tier and traffic class basis, bandwidth guarantees can be supplied to the highest service tier that is not subject to preemption (col. 4, lines 59 – 64); the method establishes a separate queue for each service tier, queues traffic associated with LSPs (Label Switching Paths – tunnels) that belong to a particular service tier (label)

separately from traffic on LSPs that do not belong to the same service tier, applies an appropriate scheduling discipline to different queues to ensure a minimum bandwidth guarantee to each service tier (label) (col. 6, lines 42 – 51); and in order to support different classes of traffic, different forwarding behaviors are typically applied to different classes of traffic, different forwarding behavior is queue scheduling priority, specifically, a packet carrying real-time voice should be forwarded before a packet carrying best effort data (col. 2, lines 63 – 67 and col. 3, lines 1 – 2).

With respect to claims 2 and 7, Ho discloses that when the packet enters the ingress LER, the ingress LER uses the network address to assign the packet to a particular FEC (Forwarding Equivalence Classes), and inserts the corresponding label into the packet, specifically within a label header. Each intermediate LSR along the LSP forwards the packet based on the label (col. 1, lines 57 – 62), that means the packet in the MPLS network is identified by label in packet; also the method separates traffic into separate queues based on service tier (label) (col. 4, lines 45 – 46). And the service tiers (Labels) are signaled via MPLS protocols, such as RSVP-TE (Resource Reservation Protocol – Traffic Engineering), so the label is MPLS TE label (col. 6, lines 23 – 28).

With respect to claims 8 and 13, Ho discloses a method for traffic and subscriber service differentiatation using multiprotocol label switching (MPLS) creates different service tiers (TE tunnels), where each service tire is associated with a unique

combination of resource class and hold priority (col. 4, lines 40 - 44), wherein (upon the request) a label switched path (tunnel) is established from an ingress point border device (Label Edge Router or LER) to an egress point border device (Label Edge Router or LER), the label switched path traverses a number of intermediate label switching devices (Label Switching Router or LSR); when packet enters the ingress LER, the ingress LER inserts the corresponding label in the packet, specifically within a label header (col. 1, lines 51 – 60); and the enhanced MPLS devices (routers) separate traffic into separate queues based on service tiers (Labels) (col. 4, lines 44 – 46); bandwidth can be supplied on a service tier and traffic class basis, bandwidth guarantees can be supplied to the highest service tier that is not subject to preemption (col. 4, lines 59 – 64); the method establishes a separate queue for each service tier, queues traffic associated with LSPs (Label Switching Paths – tunnels) that belong to a particular service tier (label) separately from traffic on LSPs that do not belong to the same service tier, applies an appropriate scheduling discipline to different queues to ensure a minimum bandwidth guarantee to each service tier (label) (col. 6, lines 42 – 51); and in order to support different classes of traffic, different forwarding behaviors are typically applied to different classes of traffic, different forwarding behavior is queue scheduling priority, specifically, a packet carrying real-time voice should be forwarded before a packet carrying best effort data (col. 2, lines 63 – 67 and col. 3, lines 1 – 2). And when the packet enters the ingress LER, the ingress LER uses the network address to assign the packet to a particular FEC (Forwarding Equivalence Classes), and inserts the corresponding label into the packet, specifically within a label header.

Each intermediate LSR along the LSP forwards the packet based on the label (col. 1, lines 57 – 62), that means the packet in the MPLS network is identified by label in packet; also the method separates traffic into separate queues based on service tier (label) (col. 4, lines 45 – 46). And the service tiers (Labels) are signaled via MPLS protocols, such as RSVP-TE (Resource Reservation Protocol – Traffic Engineering), so the label is MPLS TE label (col. 6, lines 23 – 28).

With respect to claim 14, Ho discloses a MPLS device for traffic and subscriber service differentiation using multiprotocol label switching (MPLS) creates different service tiers (labels), where each service tier is associated with a unique combination of resource class and hold priority (lines 1 – 5 in Abstract); it is common for the device to maintain a forwarding table for each incoming interface and outgoing interface (col. 2, lines 9 – 11), that means the device has a plurality of interface; the MPLS device includes a traffic/service differentiator (first processing module) to determine a service tier for a incoming packet, establishes a queue for each service tier, signals service tier using a predetermined signaling protocol such as RSVP – TE (Traffic Engineering Tunnel) and separates traffic for different service tiers to a corresponding queue from the plurality of queues (col. 7, lines 60 – 67); the scheduler (second processing module) schedules transmission opportunities for the plurality of queues based on a predetermined scheduling scheme, typically provides at least a minimum bandwidth guarantee for each service tier (col. 7, line 67; col. 8, lines 1 – 5); also Ho further mentions that in order to

support different classes of traffic, different forwarding behaviors are typically applied to the different classes of traffic, specifically, a packet carrying real-time voice (tunnel data) should be forwarding before a packet carrying best effort data (not tunnel data), thereby resulting in less delay for the real-time packet (higher priority).

With respect to claims 15 and 16, Ho discloses that when the packet enters the ingress LER, the ingress LER uses the network address to assign the packet to a particular FEC (Forwarding Equivalence Classes), and inserts the corresponding label into the packet, specifically within a label header. Each intermediate LSR along the LSP forwards the packet based on the label (col. 1, lines 57 – 62), that means the packet in the MPLS network is identified by label in packet; also the method separates traffic into separate queues based on service tier (label) (col. 4, lines 45 – 46). And the service tiers (Labels) are signaled via MPLS protocols, such as RSVP-TE (Resource Reservation Protocol – Traffic Engineering). That means by reading label in packet, traffic engineering tunnel information can be determined.

With respect to claim 22, Ho discloses that when the packet enters the ingress LER, the ingress LER uses the network address to assign the packet to a particular FEC (Forwarding Equivalence Classes), and inserts the corresponding label into the packet, specifically within a label header. Each intermediate LSR along the LSP forwards the packet based on the label (col. 1, lines 57 – 62), that means the packet in the MPLS network is identified by label in packet; also the method separates traffic into separate

queues based on service tier (label) (col. 4, lines 45 – 46). And the service tiers (Labels) are signaled via MPLS protocols, such as RSVP-TE (Resource Reservation Protocol – Traffic Engineering), so the label is MPLS TE label (col. 6, lines 23 – 28).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3 – 6, 9 – 12 and 17 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 7020150 to Ka K. Ho in view of U.S. Patent Number 6973504 to Yuji Nomura (hereinafter "Nomura").

With respect to claims 3 and 4, Ho discloses all the limitation of claim 1 (see above), which claims 3 and 4 depend.

Ho does not discloses that the queue is shared between two or more tunnels, and the reserved bandwidth for the queue comprises a sum of bandwidth reserved for each of two or more tunnels.

Nomura teaches a method for decreasing required resource for the bandwidth reservation in an inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract), which is based on a concept of shared bandwidth allocation determined when establishing a path between sites, the shared bandwidth (or aggregation bandwidth) is reserved for a plurality of paths (tunnels), instead of individual bandwidth resource reserved on a path by path basis (col. 2, lines 23 – 27); the embodiment is assumed that Label Distribution Protocol (LDP) is used for establishing MPLS path (LSP: Label Switching Path – Tunnel) (col. 5, lines 61 – 62); when a bandwidth is to be allocated for the path, a path having the same originating site ID or destination site ID is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52; P1 – P10 in Figure 5).

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the concept of shared bandwidth for a plurality of paths (tunnels) as taught by Nomura to the method of MPLS queue configuration of Ho, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

With respect to claims 5 and 6, Ho does not disclose that the queue is shared between two or more tunnels with the same head (or tail) end router.

Nomura teaches that when a bandwidth is to be allocated for the path, a path having the same originating site ID (head end router) or destination site ID (tail end router) is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52); also, the idea is illustrated in Figures 10 and 11, in which are the "Aggregated bandwidth by a group of same originating site" and "Aggregated bandwidth by a group of same destination site".

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the idea of grouping the paths (tunnels) with the same head (tail) end router as taught by Nomura to the method of MPLS queue configuration of Ho, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

Therefore, it would have been obvious to combine Nomura with Ho to obtain the invention as specified in claims 3 – 6.

With respect to claims 9 and 10, Ho discloses all the limitation of claim 8 (see above), which claims 9 and 10 depend.

Ho does not discloses that the queue is shared between two or more tunnels, and the reserved bandwidth for the queue comprises a sum of bandwidth reserved for each of two or more tunnels.

Nomura teaches a method for decreasing required resource for the bandwidth reservation in an inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract), which is based on a concept of shared bandwidth allocation determined when establishing a path between sites, the shared bandwidth (or aggregation bandwidth) is reserved for a plurality of paths (tunnels), instead of individual bandwidth resource reserved on a path by path basis (col. 2, lines 23 – 27); the embodiment is assumed that Label Distribution Protocol (LDP) is used for establishing MPLS path (LSP: Label Switching Path – Tunnel) (col. 5, lines 61 – 62); when a bandwidth is to be allocated for the path, a path having the same originating site ID or destination site ID is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52; P1 – P10 in Figure 5).

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the concept of shared bandwidth for a plurality of paths (tunnels) as taught by Nomura to the method of MPLS queue configuration of Ho, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

With respect to claims 11 and 12, Ho does not disclose that the queue is shared between two or more tunnels with the same head (or tail) end router.

Nomura teaches that when a bandwidth is to be allocated for the path, a path having the same originating site ID (head end router) or destination site ID (tail end router) is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52); also, the idea is illustrated in Figures 10 and 11, in which are the "Aggregated bandwidth by a group of same originating site" and "Aggregated bandwidth by a group of same destination site".

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the idea of grouping the paths (tunnels) with the same head

(tail) end router as taught by Nomura to the method of MPLS queue configuration of Ho, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

Therefore, it would have been obvious to combine Nomura with Ho to obtain the invention as specified in claims 9 – 12.

With respect to claim 17, Ho discloses all the limitation of claim 16 (see above), which claim 17 depends.

Ho does not disclose that the queue is shared between two or more tunnels.

Nomura teaches a system for decreasing required resource for the bandwidth reservation in an inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract), which is based on a concept of shared bandwidth allocation determined when establishing a path between sites, the shared bandwidth (or aggregation bandwidth) is reserved for a plurality of paths (tunnels), instead of individual bandwidth resource reserved on a path by path basis (col. 2, lines 23 – 27).

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the function of sharing bandwidth between two or more tunnels for reserved queue as taught by Nomura to the MPLS router of Ho, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

With respect to claim 18, Ho discloses that bandwidth can be supplied on a service tier and traffic class basis (col. 4, lines 59 – 60); and the scheduler (second processing module) typically provides at least a minimum bandwidth guarantee for each service tier (col. 8, lines 3 – 5).

With respect to claim 19, Ho does not disclose the reserved bandwidth for the queue comprises a sum of bandwidth reserved for each of two or more tunnels.

Nomura teaches the system is assumed that Label Distribution Protocol (LDP) is used for establishing MPLS path (LSP: Label Switching Path – Tunnel) (col. 5, lines 61 – 62); when a bandwidth is to be allocated for the path, a path having the same originating site ID or destination site ID is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52; P1 – P10 in Figure 5).

It would have been obvious to a person of the ordinary skill in the art at the time the invention was mad to add the function of reserving a sum of bandwidth for queue as taught by Nomura to the MPLS device of HO, in order to decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

With respect to claims 20 and 21, Ho does not disclose that the queue is shared between two or more tunnels with the same head (or tail) end router.

Nomura teaches that when a bandwidth is to be allocated for the path, a path having the same originating site ID (head end router) or destination site ID (tail end router) is searched out of the existing paths belonging to the same group ID, when the same ID is found, the sum of the bandwidth possessed by the existing path (aggregation bandwidth) and the path request bandwidth is determined as a temporary aggregation bandwidth (col. 6, lines 41 – 52); also, the idea is illustrated in Figures 10 and 11, in which are the "Aggregated bandwidth by a group of same originating site" and "Aggregated bandwidth by a group of same destination site".

It would have been obvious to a person of the ordinary skill in the art at the time the invention was made to add the function of grouping the paths (tunnels) with the same head (tail) end router as taught by Nomura to the MPLS device of Ho, in order to

decrease required resource for the bandwidth reservation in the inter-site connection network used for communication between communication sites (lines 2 – 4 in Abstract of Nomura).

Therefore, it would have been obvious to combine Nomura with Ho to obtain the invention as specified in claims 17 – 21.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leibo Ding whose telephone number is (571) 270-1137. The examiner can normally be reached on Monday-Friday, 7:30 a.m.--5:00 p.m.,EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz F. Jules can be reached on (571) 272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LD/
August 30, 2006

Frantz F. Jules
Supervisory
Patent Examiner